

Five New Species of *Cissus* (Vitaceae) from Northern Brazil

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ABSTRACT. *Cissus acrensis*, *C. amapaensis*, *C. apendiculata*, *C. araguainensis*, and *C. paraensis*, new species of Vitaceae, are described from northern Brazil. These species are distinct in many characters, mainly trichomes, leaf dimorphism, flower disc, fruits, and seeds. In addition to descriptions and illustrations, comments on probable relationships and distributions are presented.

Cissus, with approximately 350 species (Mabberley, 1987), is the largest genus of Vitaceae. The 31 species described and listed by Baker (1871) in the genus *Vitis* were transferred to *Cissus* by Planchon (1887). Since his work few other species have been described from Brazil (but see Malme, 1901; Hoehne, 1915, 1938; Kuhlmann, 1938). While working on a taxonomic survey of *Cissus* in South America, five undescribed species were found in northern Brazil: *Cissus acrensis*, *C. amapaensis*, *C. apendiculata*, *C. araguainensis*, and *C. paraensis*.

***Cissus acrensis* Lombardi, sp. nov.** TYPE: Brazil. Acre: Cruzeiro do Sul, rio Juruá, km 18 road Cruzeiro do Sul to Japiim, forest on terra firme, 26 Oct. 1966, *Prance et al.* 2843 (holotype, UEC; isotype, NY). Figure 1A–F.

Frutex scandens, *C. verticillatae* (L.) Nicolson & Jarvis similis, sed in ramis vegetabilibus foliis triangularibus et in ramis fertilibus foliis ellipticis vel obovatis, concoloribus, et epicarpo incrassato differt.

Liana, stems glabrous, terete. Tendrils not seen. Stipules 0.1 cm long, 0.15 cm wide, deltate, fleshy, glabrous, caducous. Petioles 1–4 cm long, canaliculate, glabrous. Leaf blades simple and entire, triangular on vegetative shoots, elliptic to obovate on reproductive shoots, 5–7 cm long, 1.7–5.5 cm wide, herbaceous, glabrous, drying dark, concolorous, the base reniform to cuneate, the apex acuminate, the margin denticulate. Inflorescence flat-topped, glabrous; the peduncle 0.5–2 cm long; the bracts triangular, 0.1 cm long, glabrous, ciliate. Flowers greenish to pinkish; pedicels 0.1–0.2 cm long, glabrous; calyx truncate, the lobes obscure-triangular,

0.1 cm long, 0.1–0.2 cm diam., fleshy, glabrous; corolla tetramerous, 0.1–0.2 cm long, 0.1–0.15 cm diam., petals coherent, caducous, glabrous; stamens 4, connective cuneiform, granular, drying clear, anther latrorse; disc side concave, apex convex; the style terete, the stigma not apparent. Fruit purple, botuliform, smooth, thick-skinned, 1.5 cm long, 0.8 cm wide. Seed 1, subfusiform, 1.2 cm long, 0.5 cm wide, the hilum acute, the raphe obscure, the sides irregularly rugose.

This species is known from the state of Acre in Brazil, and for this is named “*acrensis*.” It grows in borders of primary and secondary vegetation.

Cissus acrensis differs from other South American species of *Cissus* by its simple leaves and large seeds in thick-skinned fruits. It is similar to *C. verticillata* subsp. *verticillata*, but differs in having concolorous and dimorphic leaves that dry dark, thick-skinned fruits, and bigger seeds.

Paratypes. BRAZIL. Acre: Cruzeiro do Sul, Monte Belo, margem esquerda do rio Moa, 15 Feb. 1976, *Marinho* 198 (NY); Cruzeiro do Sul, próximo ao aeroporto, projeto RADAM, 16 Feb. 1976, *Monteiro & Damião* 435 (MG); rio Acre, Seringöel Auristella, Mar. 1911, *Ule* 9581 (L).

***Cissus amapaensis* Lombardi, sp. nov.** TYPE: Brazil. Amapá: Mazagão, área do experimento de manejo do convênio JARI/EMBRAPA, floresta tropical primária de terra firme, 19 June 1986, *M. J. Pires & N. T. Silva* 1234 (holotype, NY). Figure 1G–I.

Frutex scandens, pilosus, pilis malpighiaceis, folis ternatis, *C. erosae* Richard similis, sed foliolis apice acuminatis vel caudatis, inflorescentia in ramis subaphyllis differt.

Liana, stems glabrous to sericeous on nodes, terete. Trichomes malpighiaceous. Tendrils with several bifurcate branches, adhesive discs not seen, glabrous; scales not seen. Stipules 0.2–0.3 cm long, 0.15–0.35 cm wide, triangular, fleshy, glabrous, ciliate, persistent. Petioles 4–4.5 cm long, canaliculate, glabrous. Leaves absent on the distal portion

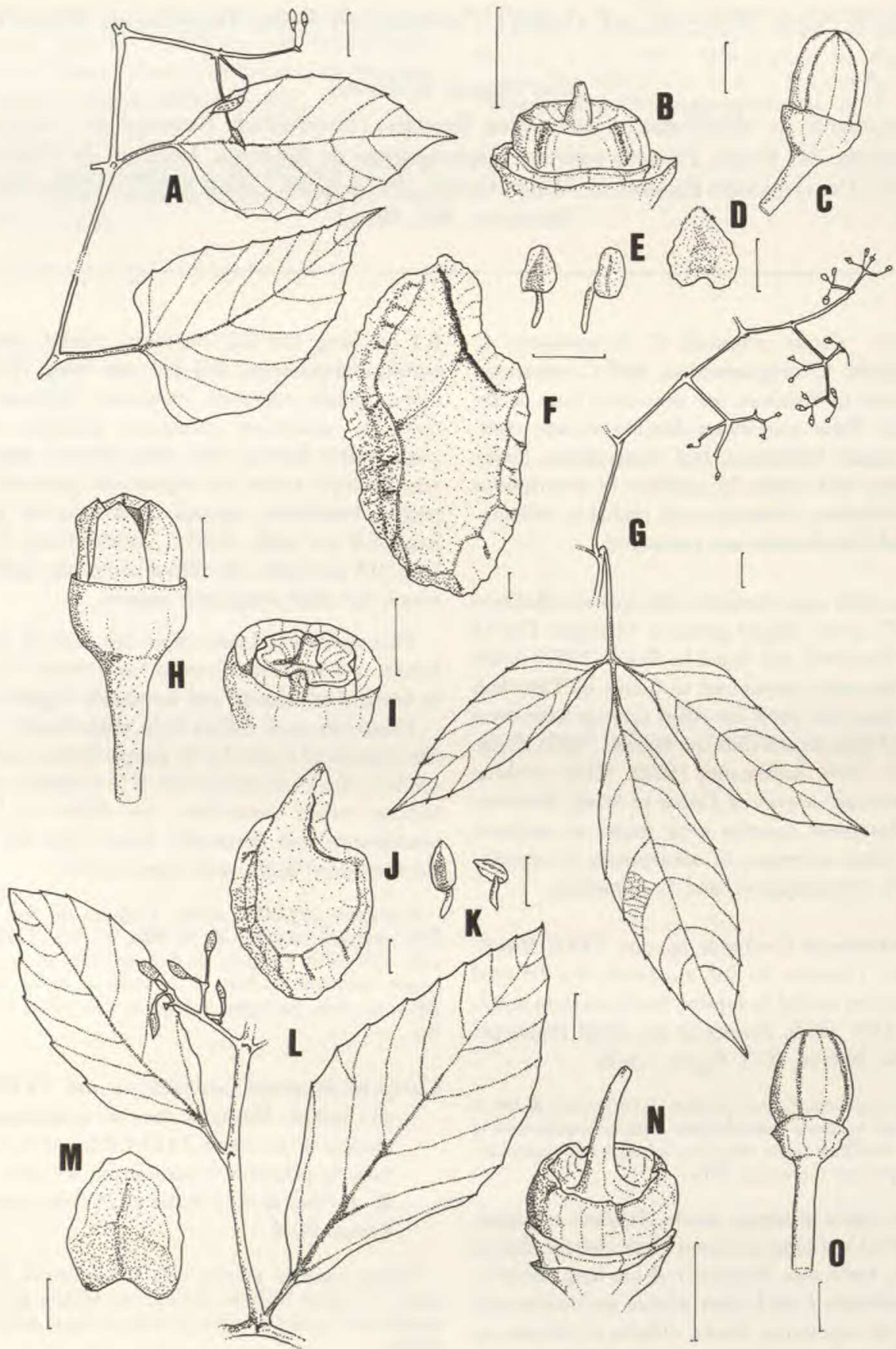


Figure 1. A–F, *Cissus acreensis* Lombardi. —A. Reproductive branch above and vegetative leaf below. —B. Nectariferous disc and pistil. —C. Flower bud. —D. Stipule. —E. Stamens, ventral and lateral views. —F. Seed. G–I, *Cissus amapaensis* Lombardi. —G. Reproductive branch. —H. Flower bud. —I. Nectariferous disc and pistil. J–O, *Cissus araguainensis* Lombardi. —J. Seed. —K. Stamens, ventral and lateral views. —L. Reproductive branch above and vegetative leaf below. —M. Stipule. —N. Nectariferous disc and pistil. —O. Flower bud. A–E drawn from Prance *et al.* 2843; F from Monteiro & Damião 435; G–I from M. J. Pires & N. T. Silva 1234; J from Irwin *et al.* 21191; K–O from Irwin *et al.* 21084a. Scales: A, G and L = 1 cm; B–F, H–K and M–O = 1 mm. Drawn by the author.

of reproductive shoots, blade ternately compound; central petiolules 1–1.5 cm long, laterals 0.3 cm long, the base sericeous; blades of central leaflets elliptic, 11.5–12 cm long, 3–3.5 cm wide, blades of lateral leaflets subelliptic, 7.9–9.4 cm long, 2–2.7 cm wide, herbaceous, glabrous on adaxial side, sparsely sericeous on midvein on abaxial side, the base cuneate, the apex acuminate to caudate, the margin denticulate. Inflorescence flat-topped, apex sparsely sericeous; the peduncle 1.5–1.7 cm long; the bracts deltate, 0.1 cm long, the base sericeous, ciliate. Flowers red; pedicels 0.25–0.3 cm long, glabrous; calyx truncate, 0.15 cm long, 0.2 cm diam., fleshy, papillose, glabrous; corolla tetramerous, 0.15 cm long, 0.15 cm diam., petals coherent, caducous, papillose, glabrous; stamens 4, connective deltate, granular, drying dark, anther extrorse; disc apex obconic; the style conic, the stigma slightly clavate. Fruit not seen. Seed not seen.

This species is known from a unique collection in the rainforest of Amapá State in Brazil, and for this is named “amapaensis.” I have failed to locate other specimens and isotypes in Museu Göeldi (MG), Instituto de Pesquisas da Amazônia (INPA), and Centro de Pesquisas do Trópico úmido (IAN) herbaria. The presumed restricted distribution of this species places it in an endangered situation.

This species differs from other trifoliolate South American *Cissus* species by acuminate to caudate leaflets and malpighiaceus trichomes. It is similar to *C. erosa* subsp. *erosa* but differs in the caudate apex and shape of the leaflets, inflorescences borne in reproductive shoots with leafless apices and longer flowers.

Cissus araguainensis Lombardi, sp. nov. TYPE: Brazil. Tocantins: cut-over gallery forest, land of George Yunes & Cia, Araguaína, rio das Lontras, ca. 300 m, 13 Mar. 1968, *Irwin et al.* 21084a (holotype, UB [as 21084]). Figure 1J–O.

Frutex scandens, pilosus, pilis uni et bicellularibus et malpighiaceis, *C. verticillatae* (L.) Nicolson & Jarvis similis, sed pilis, foliis ellipticis, parum dicoloribus; pedicellis puberulis; semine subpyriformi, 0.7 cm longo, 0.3 cm lato differt.

Liana, stems puberulous, sometimes with elliptic lenticels, terete. Trichomes unicellular to bicellular and adpressed malpighiaceus. Tendrils not branched, glabrous, adhesive discs not seen; scales 0.1 cm long, deltate, glabrous, ciliate. Stipules 0.2–0.3 cm long, 0.15–0.2 cm wide, triangular to elliptic, fleshy, puberulent, ciliate and sinuate, persistent. Petioles 0.4–1.7 cm long, canaliculate, sparsely puberulent in the base. Leaf

blades simple and entire, elliptic, 5.7–13.5 cm long, 1.5–6.2 cm wide, herbaceous, glabrescent to puberulent on the abaxial side, the veins on the abaxial side with minuscule spines, slightly bicolored, the base cuneate, the apex acuminate, the margin denticulate. Inflorescence flat-topped, puberulent; the peduncle 1.2–2.5 cm long; the bracts triangular, 0.1–0.15 cm long, glabrous, ciliate. Flowers greenish; pedicels 0.15–0.25 cm long, sparsely puberulent; calyx truncate, 0.05–0.1 cm long, 0.1 cm diam., fleshy, puberulent on the base; corolla tetramerous, 0.1–0.2 cm long, 0.1–0.15 cm diam., petals coherent, caducous, glabrous; stamens 4, connective cuneiform, granular, drying clear, anther latrorse; disc side concave, apex convex; the style terete, the stigma slightly clavate. Fruit purple, subspheric, smooth, 0.5 cm diam. Seed 1, subpyriform, 0.7 cm long, 0.3 cm wide, the hilum acute, the raphe prominent and transversely grooved, the sides smooth.

This species is named for the type locality, and is known from other states in northern Brazil where it occurs in borders of forests and savanna areas (cerrado). I know of no explanation for this apparent disjunction, except for the general lack of liana collections, chiefly in the Amazon basin.

This species differs from other simple-leaved species by seed shape and the combination of unicellular, bicellular, and malpighiaceus hairs. It is similar to *Cissus verticillata* subsp. *verticillata*, but differs in having bicolored leaves, in seed shape, and in the presence of malpighiaceus hairs.

Paratypes. BRAZIL. Maranhão: Fortuna, lugar Caiçara a 15 km SE de Fortuna, 05°48'S, 44°03'W, 21 Feb. 1983, *J. U. Santos et al.* 633 (F, MO, NY). Pará: Conceição do Araguaia, ca. 20 km W of Redenção, near córrego São João and Troncamento Santa Teresa, ca. 08°03'S, 50°10'W, 350–620 m, 8 Feb. 1980, *Plowman et al.* 8480 (MO, NY). Tocantins: land of George Yunes & Cia, Araguaína, at rio das Lontras, ca. 300 m, 14 Mar. 1968, *Irwin et al.* 21191 (NY, UB); margem direita do rio Tocantins, canteiro de obras da Usina Hidrelétrica da Serra da Mesa, 23 Feb. 1991, *B. A. S. Pereira et al.* 1544 (US).

Cissus apendiculata Lombardi, sp. nov. TYPE: Brazil. Pará: Marabá, Serra dos Carajás, canga do N-4, 25 Jan. 1985, *Nascimento & Bahia* 961 (holotype, MG). Figure 2A–F.

Frutex scandens, pilosus, pilis longis et ferrugineis; foliis ternatis, *C. surinamensi* Descoings similis, sed calyce basi 1–3 apendiculata, apendiculis ligulatis differt.

Liana, stems hispid, terete. Trichomes not ramified, multicellular, long or short and not secretory or rarely capitate and secretory. Tendrils with several bifurcate branches, with adhesive discs, his-

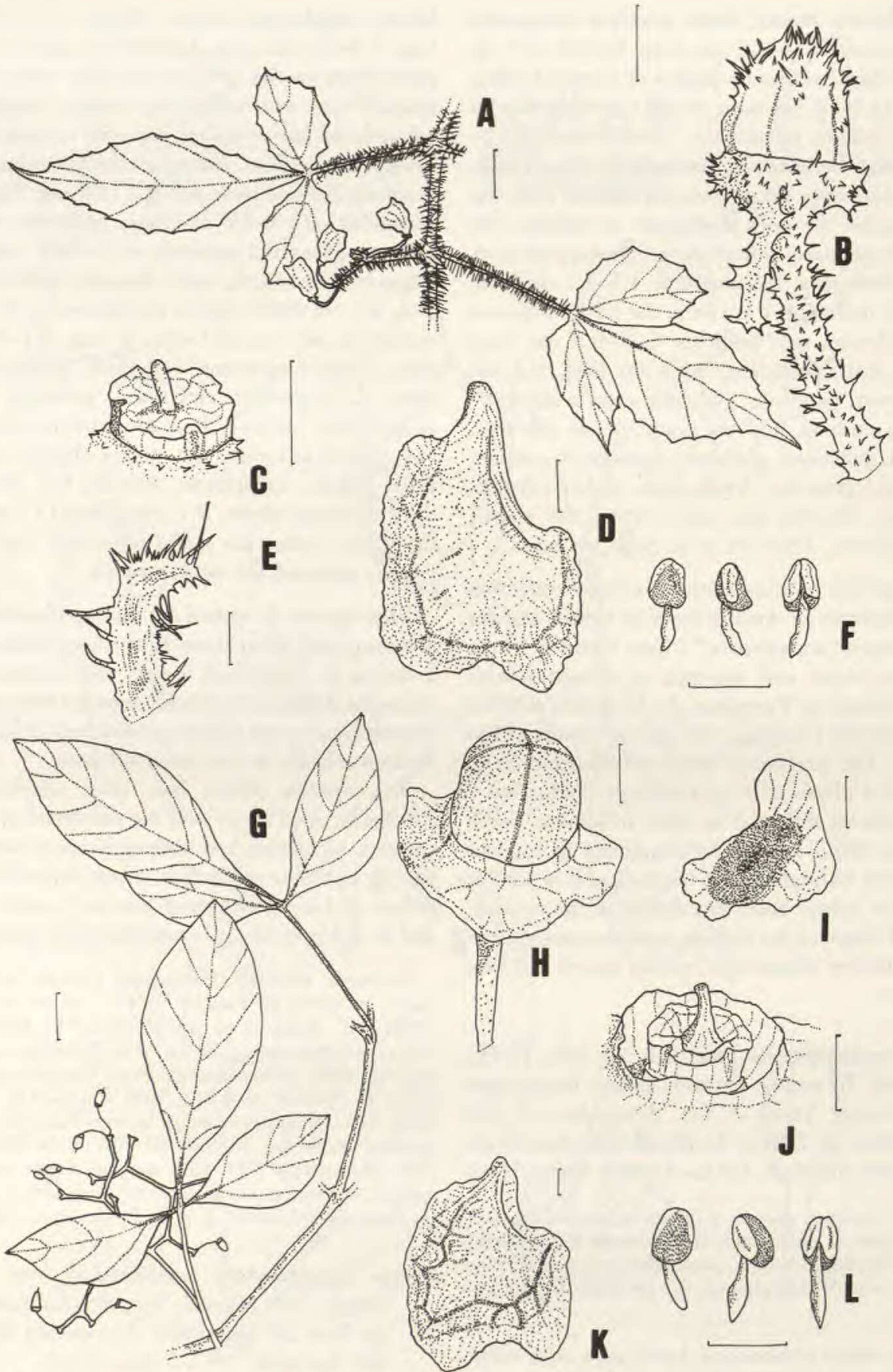


Figure 2. A–F, *Cissus apendiculata* Lombardi. —A. Reproductive branch. —B. Flower bud. —C. Nectariferous disc and pistil. —D. Seed. —E. Stipule. —F. Stamens, ventral, lateral, and dorsal views. G–L, *Cissus paraensis* Lombardi. —G. Reproductive branch. —H. Flower bud. —I. Stipule. —J. Nectariferous disc and pistil. —K. Seed. —L. Stamens, ventral, lateral, and dorsal views. A and D drawn from A. S. L. Silva et al. 1940; B, C and E, F from Nascimento & Bahia 961; G, K from Plowman et al. 9612; H, J, and L from Lisboa et al. 1256; I from M. J. P. Pires et al. 838. Scales: A and G = 1 cm; B–F and H–L = 1 mm. Drawn by the author.

pid; scales triangular, 0.1 cm long, hispid, ciliate. Stipules 0.3–0.6 cm long, 0.2–0.3 cm wide, falcate, membranous, hispid, ciliate, persistent. Petioles 2.3–4 cm long, canaliculate, hispid. Leaf blades ternately compound; central petiolules 0–0.3 cm long, laterals 0–0.1 cm long, hispid; blades of central leaflets rhombic to elliptic, 4–8.7 cm long, 1.5–5.3 cm wide, blades of lateral leaflets subelliptic, 2.1–5.3 cm long, 1–3.4 cm wide, herbaceous, hispid to sparsely hispid, the base cuneate, the apex acuminate to caudate, the margin denticulate. Inflorescence flat-topped, hispid; the peduncle 1.4–1.8 cm long; the bracts triangular, 0.1 cm long, hispid, ciliate. Flowers greenish; pedicels 0.25–0.35 cm long, hispid; calyx truncate, 0.05–0.1 cm long, 0.1–0.15 cm diam., fleshy, hispid; laterally appendicular with 1–3 lingulate lobes, lobes 0.2 cm long, ciliate; corolla tetramerous, 0.1–0.15 cm long, 0.1–0.15 cm diam., petals coherent, caducous, the apex hispid; stamens 4, connective deltate, granular, drying dark, anther extrorse; disc apex concave with a central depression; the style terete, the stigma slightly clavate. Fruit purple, conic, drying sulcate, smooth to tuberculate, 1.0 cm long, 0.65 cm wide. Seed 1, subdolabriform, 0.8 cm long, 0.5 cm wide, the apex obcordate, the raphe prominent and transversely grooved, the sides slightly rugose.

This species is known from northeastern Brazil, chiefly in areas of iron mining (the “cangas”) in the Serra dos Carajás, Pará State, and savanna areas (cerrado). The intense commercial exploration of this area is a menace for this species in the area of principal (and type) collections.

The unique calyx of *Cissus apendiculata* differs from that of all other species of *Cissus*. I know of no similar species in the Neotropics. The relationships of this species are therefore obscure, despite some similarity to *Cissus surinamensis* Descoings in leaf aspect.

Paratypes. BRAZIL. **Maranhão:** Monção, rio Pindaré, June 1944, *Fróes* 20253 (NY). **Pará:** Monte Alegre, Airí, 6 May 1953, *Andrade-Lima* 53–1391 (IPA); Serra dos Carajás, 20–25 km NW of Serra Norte mining camp, ca. 05°55'S, 50°26'W, 6 Dec. 1981, *Daly et al.* 1776 (F, NY); Serra dos Carajás, Marabá, N-4, 20 Mar. 1984, *A. S. L. Silva et al.* 1940 (MG, NY). **Tocantins:** ca. 5 km N of Araguaína, ca. 300 m, 14 Mar. 1968, *Irwin et al.* 21176 (UB).

Cissus paraensis Lombardi, sp. nov. TYPE: Brazil. Pará: Tucuruí, km 25 S of Represa Tucuruí on road (BR 422) to Breu Branco, ca. 03°52'S, 49°44'W, 90 m, 15 Mar. 1980, *Plowman et al.* 9612 (holotype, MG; isotypes, F, NY). Figure 2G–L.

Frutex scandens, foliis ternatis, *C. trigonae* Willdenow ex Schultes & Schultes f. similis, sed stipulis et bracteis basi gibbosis, basi calice disciforme differt.

Liana, stems glabrous to rarely sparsely puberulent, terete to winged on older stems. Trichomes rare and not ramified, multicellular. Tendrils with several bifurcate branches, with adhesive discs, glabrous; scales 0.1 cm long, triangular, glabrous, the base gibbous. Stipules 0.3–0.6 cm long, 0.2–0.4 cm wide, deltate, fleshy, glabrous to rarely puberulent in its gibbosity, the base gibbous and drying dark, the margin darkened and revolute. Petioles 1.7–8.3 cm long, canaliculate, glabrous to rarely puberulent. Leaf blades ternately compound; central petiolules 0–1.4 cm long, laterals 0–0.5 cm long, glabrous to rarely puberulent; blades of central leaflets elliptic to obovate, 3.5–17.4 cm long, 1–10.1 cm wide, blades of lateral leaflets subelliptic, 1.4–12.9 cm long, 0.5–7.9 cm wide, herbaceous, glabrous to rarely puberulent, chiefly along the veins on the abaxial side, the base cuneate, the lateral leaflets rarely lobulate, the apex acute to acuminate, the margin denticulate. Inflorescence flat-topped, glabrous to rarely puberulent; the peduncle 1.1–6.2 cm long; the bracts triangular, 0.15–0.2 cm long, the base gibbous and drying dark, the margin crispate. Flowers greenish to rarely red; pedicels 0.2–0.35 cm long, papillose, glabrous to rarely puberulent; calyx truncate, 0.1–0.15 cm long, 0.2–0.5 cm diam., fleshy, glabrous to rarely puberulent, the base laterally discoid; corolla tetramerous, 0.1–0.2 cm long, 0.1–0.3 cm diam., petals coherent, caducous, glabrous to rarely puberulent; stamens 4, connective deltate, granular, drying dark, anther extrorse; disc green, the apex concave with a central depression; the style terete, the stigma slightly clavate. Fruit purple, subspheric, with sparse lenticels, 1 cm long, 0.7 cm wide. Seed 1, subrectangular to subpyriform, 0.85 cm long, 0.65 cm wide, the hilum obtuse, the apex emarginate, the raphe prominent and transversely grooved, the sides rugose.

This species is named for Pará State in Brazil, where the type material was collected. It occurs in the secondary and primary forests and savannas (campina and campinarana). This species differs from others with ternately compound leaves in its stipules and bracts that are prominently gibbous and dark on drying, and in its discoid calyx.

Cissus paraensis is similar to *C. trigona* Willdenow ex Schultes & Schultes f., but can be easily distinguished by the smaller leaves and seeds, the discoid calyx, and fruits that are not thick-skinned.

Paratypes. BRAZIL. **Acre:** Rio Branco, Rio Branco-

Porto Velho Highway, between km 22–42, 28 Mar. 1979, *Albuquerque et al.* 1276 (NY, US). **Amazonas:** Manicoré, BR 230, 120 km de Humaitá, reserva indígena dos Tenharim, 07°55'S, 62°00'W, 15 Apr. 1985, *Cid* 5531 (F, MG, NY, US). **Pará:** Almeirim, monte Dourado, área da água Azul, 01°05'S, 52°70'W, 26 Mar. 1986, *M. J. Pires et al.* 838 (INPA, MG, NY); Tucuruí, margem direita do rio Tocantins, BR 263, ramal à direita do km 16, 29 Jan. 1980, *Lisboa et al.* 1256 (INPA, NY).

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